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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/551,655	07/13/2006	Shinichi Ayabe	8062-1031	8011
466 7590 12/26/2007 YOUNG & THOMPSON 745 SOUTH 23RD STREET 2ND FLOOR ARLINGTON, VA 22202			EXAMINER PAK, YONG D	
			ART UNIT 1652	PAPER NUMBER
			MAIL DATE 12/26/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/551,655

Applicant(s)

AYABE, SHINICHI

Examiner

Yong D. Pak

Art Unit

1652

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 1 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 28 September 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-50 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) \_\_\_\_\_ is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-50 are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application
- ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

This application is a 371 of PCT/JP04/04214.

The preliminary amendment filed on September 28, 2005, amending claims 3, 6, 9-13, 17-20, 22-23, 26, 29, 32-36, 40, 43-45 and 47-48, has been entered.

Claims 1-50 are pending.

### ***Election/Restrictions***

Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group I, claim(s) 1-2 and 9, drawn to a 2-hydroxyisoflavanone dehydratase comprising a sequence of amino acids 1-328 of SEQ ID NO:1.

Group II, claim(s) 3-8 and 12-17, drawn to a polynucleotide encoding the 2-hydroxyisoflavanone dehydratase of Group I or a polynucleotide comprising SEQ ID NO:2 or variants thereof, vector comprising said polynucleotide, host cell transformed with said vector and a method of producing a 2-hydroxyisoflavanone dehydratase.

Group III, claim(s) 10, drawn to a method of dehydrating a 2-hydroxyisoflavanone using the protein of Group I.

Group IV, claim(s) 11, drawn to a method of producing an isoflavoid using the protein of Group I.

Group V, claim(s) 18-19, drawn to a method of producing an isoflavoid using the polynucleotide of Group II.

Group VI, claim(s) 20-21, drawn to a transgenic plant comprising the polynucleotide of Group II.

Group VII, claim(s) 22, drawn to a method of producing isoflavonoid using the plant of Group VI.

Group VIII, claim(s) 23, drawn to a method of modifying isoflavonoid using the plant of Group VI.

Group IX, claim(s) 24-25 and 32, drawn to a 2-hydroxyisoflavanone dehydratase comprising a sequence of amino acids 1-319 of SEQ ID NO:3.

Group X, claim(s) 26-31 and 35-43, drawn to a polynucleotide encoding the 2-hydroxyisoflavanone dehydratase of Group IX or a polynucleotide comprising SEQ ID NO:4 or variants thereof, vector comprising said polynucleotide, host cell transformed with said vector and a method of producing a 2-hydroxyisoflavanone dehydratase.

Group XI, claim(s) 33 drawn to a method of dehydrating a 2-hydroxyisoflavanone using the protein of Group IX.

Group XII, claim(s) 34, drawn to a method of producing an isoflavoid using the protein of Group IX.

Group XIII, claim(s) 44, drawn to a method of producing an isoflavoid using the polynucleotide of Group X.

Group XIV, claim(s) 45-46, drawn to a transgenic plant comprising the polynucleotide of Group XI.

Group XV, claim(s) 47, drawn to a method of producing isoflavonoid using the plant of Group XIV.

Group XVI, claim(s) 48, drawn to a method of modifying isoflavonoid using the plant of Group XIV.

Group XVII, claim(s) 49-50, drawn to a polynucleotide encoding an enzyme having a carboxylesterase motif and catalyzing a dehydration reaction.

The inventions listed as Groups I-XVII do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons:

The technical feature linking Groups I-VIII appears to be that they all relate to a 2-hydroxyisoflavanone dehydratase comprising a sequence of amino acids 1-328 of SEQ ID NO:1 or variants thereof and the technical feature linking Groups IX-XVI appears to be that they all relate to a 2-hydroxyisoflavanone dehydratase comprising a sequence of amino acids 1-329 of SEQ ID NO:3 and variants thereof. The enzyme of Group XVII is unrelated to the enzyme of Groups I-VIII and Groups IX-XVI, both in structure and function.

However, Hamanatsuka et al. (Phytochemistry (1998), Vol. 49, No.2, pages 497-505 – form PTO-1449) discloses a 2-hydroxyisoflavanone dehydratase (abstract). “a sequence of amino acids 1-328 of SEQ ID NO:1” or “a sequence of amino acids 1-319 of SEQ ID NO:3” encompasses a fragment of as few as 2 contiguous amino acids of SEQ ID NO:1 or 3. Thus, the enzyme of Hamanatsuka et al. anticipates the technical feature of Groups I-VIII and IX-XVI.

Therefore, the technical feature linking the inventions of Groups I-XVI does not constitute a special technical feature as defined by PCT Rule 13.2, as it does not define a contribution over the prior art.

Further, Groups I-XVI do not share a technical feature because the DNA molecule of Groups II and X can encode a polypeptide not having the structure of the protein of Groups I or IX. For a DNA and protein group to share a special technical feature, claims drawn to the DNA must be DNA sequences that encode the structure of the protein in the claims drawn to the protein (see PCT administrative instructions Example 17). Therefore, the technical feature linking Groups I-VIII and Groups IX-XVI is lacking.

The special technical feature of Group I, claim(s) 1-2, 9, drawn to a 2-hydroxyisoflavanone dehydratase comprising a sequence of amino acids 1-328 of SEQ ID NO:1.

The special technical feature of Group II is to a polynucleotide encoding the 2-hydroxyisoflavanone dehydratase I or a polynucleotide comprising SEQ ID NO:2 or variants thereof, vector comprising said polynucleotide, host cell transformed with said vector and a method of producing a 2-hydroxyisoflavanone dehydratase.

The special technical feature of Group III is a method of dehydrating a 2-hydroxyisoflavanone using a 2-hydroxyisoflavanone dehydratase.

The special technical feature of Group IV is a method of producing an isoflavonoid using a 2-hydroxyisoflavanone dehydratase I.

The special technical feature of Group V is a method of producing an isoflavonoid using a polynucleotide encoding a 2-hydroxyisoflavanone dehydratase.

The special technical feature of Group VI is a transgenic plant comprising a polynucleotide encoding a 2-hydroxyisoflavanone dehydratase.

The special technical feature of Group VII is to a method of producing isoflavonoid using a plant comprising a polynucleotide encoding a 2-hydroxyisoflavanone dehydratase.

The special technical feature of Group VIII is a method of modifying isoflavonoid using a plant comprising a polynucleotide encoding a 2-hydroxyisoflavanone dehydratase.

The special technical feature of Group IX is a 2-hydroxyisoflavanone dehydratase comprising a sequence of amino acids 1-319 of SEQ ID NO:3.

The special technical feature of Group X is a polynucleotide encoding the 2-hydroxyisoflavanone dehydratase or a polynucleotide comprising SEQ ID NO:4 or variants thereof, vector comprising said polynucleotide, host cell transformed with said vector and a method of producing a 2-hydroxyisoflavanone dehydratase.

The special technical feature of Group XI is a method of dehydrating a 2-hydroxyisoflavanone using a 2-hydroxyisoflavanone dehydratase.

The special technical feature of Group XII is a method of producing an isoflavoid using a 2-hydroxyisoflavanone dehydratase.

The special technical feature of Group XIII is a method of producing an isoflavoid using a polynucleotide encoding a 2-hydroxyisoflavanone dehydratase.

The special technical feature of Group XIV is a transgenic plant comprising a polynucleotide encoding a 2-hydroxyisoflavanone dehydratase.

The special technical feature of Group XV is a method of producing isoflavonoid using a plant comprising a polynucleotide encoding a 2-hydroxyisoflavanone dehydratase.

The special technical feature of Group XVI is a method of modifying isoflavonoid using a plant comprising a polynucleotide encoding a 2-hydroxyisoflavanone dehydratase.

The special technical feature of Group XVII is a polynucleotide encoding an enzyme having a carboxylesterase motif and catalyzing a dehydration reaction.

Accordingly, Groups I-XVII are not so linked by the same or a corresponding special technical feature as to form a single general inventive concept.

Applicant is advised that the reply to this requirement to be complete must include an election of the invention to be examined even though the requirement be traversed (37 CFR 1.143).

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Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yong Pak whose telephone number is 571-272-0935. The examiner can normally be reached 6:30 A.M. to 5:00 P.M. Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ponnathapu Achutamurthy can be reached on 571-272-0928. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 571-272-1600.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll free).



Yong D. Pak  
Patent Examiner 1652